

# Work Order ID 66347

Thursday, February 10, 2011 1:40:34 PM

Page 1

Item ID: D407-667-105TRN

Accept

Revision ID:

Item Name: Crosstube Turning Detail

Start Date: 2/11/2011 Start Qty: 1.00

Required Date: 2/25/2011 Req'd Qty: 1.00

Reference:

Cust Item ID:

Customer:

Approvals:

Process Plan: *mf*

Date: *11-02-10* Tooling:

Date:

QC:

Date: SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject # Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D407-667-145	Rev C

100



Mori Seiki

Mori Seiki CNC Lathe Large

MORI SEIKI CNC LATHE LARGE

Memo

1-Fill tube with sand & install plugs DT8673 on both ends as per Folio FA249□2-Turn first side as per Folio FA249□3- File transition lines smooth.

0.00

*SA 11/2/15*

110



QC

Quality Control

QC1- Inspect dimensions to dimension sheet

Memo

0.00

*SA 11/2/15*

120



Mori Seiki

Mori Seiki CNC Lathe Large

MORI SEIKI CNC LATHE LARGE

Memo

1-Turn second side as per Folio FA249□2- File transition lines smooth.□3- Remove sand and plugs□4-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-145 □Inside of Cuff(Do not engrave on outside of tube)

0.00

*SA 11/2/15*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Setup Start



Revision ID:

Stop



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Required Date: 2/25/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Run Start



Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

QC1- Inspect dimensions to dimension sheet

0.00



QC

Memo

0.00

Quality Control

11/2/15

140

QC8- Inspect parts - second check

0.00



QC

Memo

Quality Control

11-02-23

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

11/02/23

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Page 3

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Customer:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_

Run Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

160

QC3- Inspect Part Finish

0.00

QC

Memo

0.00

Quality Control

170

Packaging

0.00

Packaging

Memo

Packaging

Identify and stock in Kanban rack □ Location: 46

180

QC21- Final Inspection - Work Order Release

0.00

QC

Memo

0.00

Quality Control

ME  
11-02-23

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# Picklist Print

Thursday, February 10, 2011 1:40:29 PM

Page 1

Work Order ID: 66347

Parent Item: D407-667-105TRN

Parent Item Name: Crosstube Turning Detail


Start Date: 2/11/2011

Required Date: 2/25/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:a 08.02.28 new issue EC  
IPP Rev B 08.04.02 Removed polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6010-115  Crosstube Material		Manufactured	No			110	Each	39.0000	1	1		11/2/15	

Location

Loc Qty

Loc Code

LG

39

26424

2

38343

37

W/O:		WORK ORDER CHANGES					
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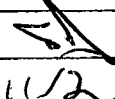
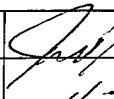




<b>DART AEROSPACE LTD</b>		<b>Work Order:</b> 66347
<b>Description:</b> Crosstube Assembly		<b>Part Number:</b> D407-667-145
<b>Inspection Dwg:</b> D407-667-145 Rev: C		<b>Page 1 of 1</b>

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.244	/	Mic	ENC-04
	1.865	+0.005/-0.000	1.869	/	Mic	
	1.878	+0.005/-0.000	1.881	/	Ueln	SA-05
	1.970	+0.005/-0.000	1.970	/		
	2.030	+0.005/-0.000	2.030	/		
	2.165	+0.005/-0.000	2.170	/		
	0.125	+/-0.010	0.134	/		
	R0.063	+/-0.010	R.063	/	R-G.	
	R0.500	+/-0.010	R.500	/		
	R0.063	+/-0.010	R.063	/		
	4.438	+/-0.010	4.438	/		
SIDE B	2.240	+0.005/-0.000	2.244	/		
	1.865	+0.005/-0.000	1.870	/		
	1.878	+0.005/-0.000	1.882	/		
	1.970	+0.005/-0.000	1.974	/		
	2.030	+0.005/-0.000	2.030	/		
	2.165	+0.005/-0.000	2.169	/		
	0.125	+/-0.010	0.135	/		
	R0.063	+/-0.010	R.063	/		
	R0.500	+/-0.010	R.500	/		
	R0.063	+/-0.010	R.063	/		
	4.438	+/-0.010	4.439	/		
1	113.20	+/-0.020	113.20	/	Type	SA-01

<b>Measured by:</b> 	<b>Audited by:</b> 	<b>Prototype Approval:</b>	N/A
<b>Date:</b> 11/2/15	<b>Date:</b> 11-07-15	<b>Date:</b>	N/A

Rev	Date	Change	Revised by	Approved
A	04.04.21	New Issue (P/O D407-667-105)	KJ/RF	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	09.06.11	Dwg Rev updated	KJ 	

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**NOTE:** Date & initial all entries

Item	Qty -145	Part Number	Description
1	X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
2	1	D6010-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

#### GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6010-115  
FINISHED LENGTH = 113.20±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-145" AND BATCH NUMBER ON  
INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 17.8 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER  
QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE  
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS  
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN  
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

#66347

RELEASED  
03/11/12

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. 7 ADD TOLERANCES (ZN C6-3, C4-3, D2-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	02.05.08
REV.	DESCRIPTION	BY	DATE
DESIGN	DP	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	DP	D407-667-145	SHEET 1 OF 4
MFG. APPR.	DP	TITLE	SCALE
APPROVED	DP	CROSSTUBE ASS'Y (407 HIGH FWD)	NTS
DE APPR.	DP	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		

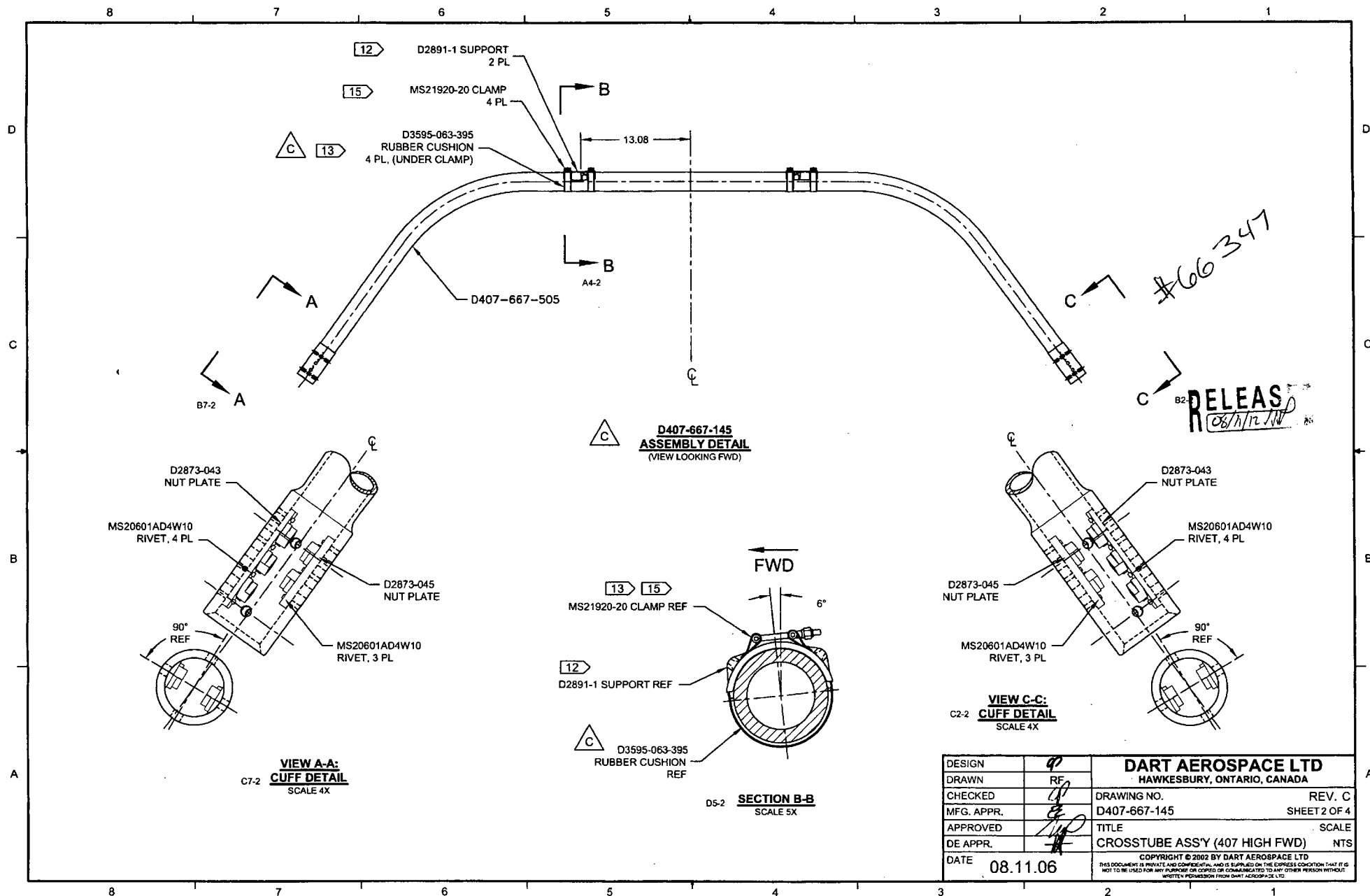
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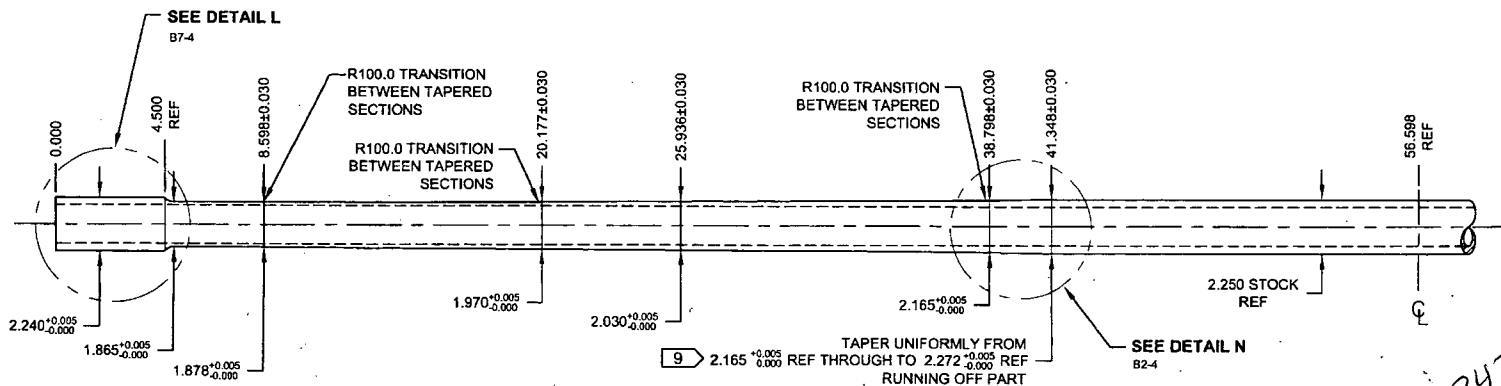
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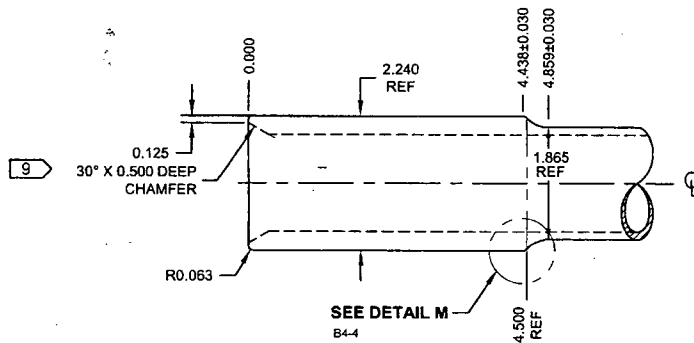
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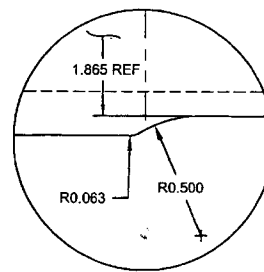




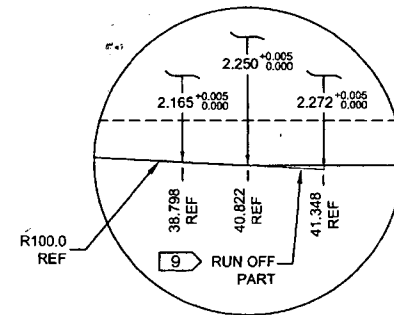
**C TURNING DETAIL**



**DETAIL L:  
CROSSTUBE CUFF**  
NOT TO SCALE



**DETAIL M:  
CUFF TRANSITION**  
NOT TO SCALE



**DETAIL N:  
TAPER RUN-OFF**  
NOT TO SCALE

**RELEASED**

DESIGN	9	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CF	DRAWING NO.	REV. C
MFG. APPR.	CF	D407-667-145	SHEET 4 OF 4
APPROVED	CF	TITLE	SCALE
DE APPR.	CF	CROSSTUBE ASS'Y (407 HIGH FWD)	NTS
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